AMENDMENTS TO THE CLAIMS

1-15 (canceled)

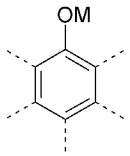
16. (Previously Presented) A composition for the treatment of metal surfaces, containing

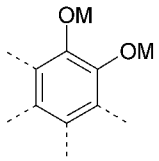
a) at least one polymer as component A, composed of the structural element

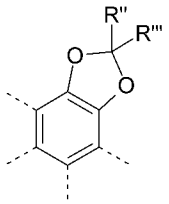
(1)

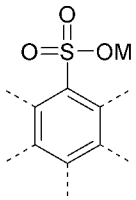
(1) 

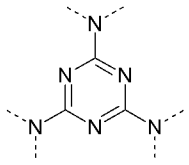
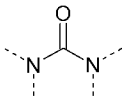
and at least three structural elements selected from the group consisting of

(2) 

(3) 

and/or 

(4) 

(5)  and/or  and/or 

where

in structural element (1)

R' is hydrogen or an alkyl, cycloalkyl, aryl, aralkyl or alkaryl radical of less than 31 carbon atoms which may be unsubstituted or substituted by alkyl radicals or heteroatom-containing groups or may be interrupted by heteroatoms or may contain double bonds;

in structural element (3)

R" and R"' are any desired radicals having a molecular weight of < 200 g/mol,

in structural elements (2), (3) and (4)

M, in each case independently of one another, are hydrogen or a cation,

and

in structural element (5)

R is hydrogen or an alkyl, cycloalkyl, aryl, aralkyl or alkaryl radical which may be unsubstituted or substituted by alkyl radicals or heteroatom-containing groups or may be interrupted by heteroatoms;

b) water or another solvent which is suitable for dissolving, dispersing, suspending or emulsifying the polymer (component A), as component B;

c) optionally, surface-active compounds, dispersants, suspending media and/or emulsifiers, as component C,

wherein the polymer (compound A) is prepared by polycondensation, wherein the following components are reacted with one another:

(1) at least one aldehyde as component Aa,

(2) at least one aromatic compound which carries at least one OM group or one sulfo group, $-SO_2OM$, or both groups, as component Ab,

and at least one of the constituents (3) and (4), wherein

(3) at least on compound selected from diphenols or polyphenols having vicinal OM groups,

it being possible, if required, for the vicinal OH groups to be protected as acetal or ketal, as component Ac,

(4) at least one amino compound as component Ad,

and where, in components Ab and Ac, M, in each case independently of one another, are hydrogen or a cation, or a divalent or polyvalent cation, if negative charges sufficient for compensation are present,

and said composition containing, in addition to components A, B and, if required, C,

d) at least one salt, one acid or one base based on transition metal cations, transition metal oxo anions, fluorometallates or lanthanoids, as component D,

and/or

e) at least one acid selected from the group consisting of phosphoric acid, sulfuric acid, sulfonic acids, nitric acid, hydrofluoric acid and hydrochloric acid, as component E,

and/or

f) at least one further corrosion inhibitor as component F,

and/or

g) compounds of Ce, Ni, Co, V, Fe, Zn, Zr, Ca, Mn, Mo, W, Cr and/or Bi as component G,

and/or

h) further assistants and additives as component H.

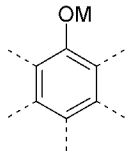
17. (Previously Presented) A composition for the treatment of metal surfaces, containing

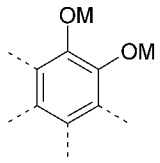
a) at least one polymer as component A, composed of the structural element

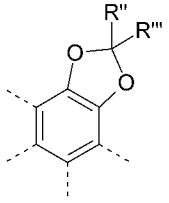
(1)

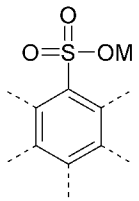
(1) 

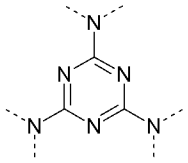
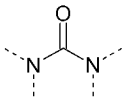
and at least three structural elements selected from the group consisting of

(2) 

(3) 

and/or 

(4) 

(5)  and/or  and/or 

where

in structural element (1)

R' is hydrogen or an alkyl, cycloalkyl, aryl, aralkyl or alkaryl radical of less than 31 carbon atoms which may be unsubstituted or substituted by alkyl radicals or heteroatom-containing groups or may be interrupted by heteroatoms or may contain double bonds;

in structural element (3)

R" and R"' are any desired radicals having a molecular weight of < 200 g/mol,

in structural elements (2), (3) and (4)

M, in each case independently of one another, are hydrogen or a cation,

and

in structural element (5)

R is hydrogen or an alkyl, cycloalkyl, aryl, aralkyl or alkaryl radical which may be unsubstituted or substituted by alkyl radicals or heteroatom-containing groups or may be interrupted by heteroatoms;

b) water or another solvent which is suitable for dissolving, dispersing, suspending or emulsifying the polymer (component A), as component B;

c) optionally, surface-active compounds, dispersants, suspending media and/or emulsifiers, as component C,

wherein the polymer (compound A) is prepared by polycondensation, wherein the following components are reacted with one another:

(1) at least one aldehyde as component Aa,

(2) at least one aromatic compound which carries at least one OM group or one sulfo group, $-SO_2OM$, or both groups, as component Ab,

and at least one of the constituents (3) and (4), wherein

(3) at least on compound selected from diphenols or polyphenols having vicinal OM groups,

it being possible, if required, for the vicinal OH groups to be protected as acetal or ketal, as component Ac,

(4) at least one amino compound as component Ad,

and where, in components Ab and Ac, M, in each case independently of one another, are hydrogen or a cation, or a divalent or polyvalent cation, if negative charges sufficient for compensation are present,

and said composition, containing, in addition to components A, B and, if required, C:

i) at least one metal oxide and/or metal salt as component I,

j) if required, at least one complexing agent as component J,

k) if required, at least one acid or one alkali metal salt or alkaline earth metal salt of the corresponding acid as component K,

l) if required, further additives as component L.

18. (canceled)

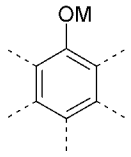
19. (Previously Presented) A process for the treatment of a metal surface, wherein the metal surface is brought into contact with a composition for the treatment of metal surfaces, containing

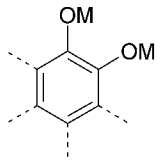
a) at least one polymer as component A, composed of the structural element

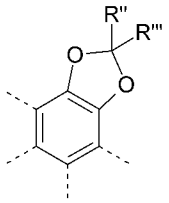
(1)

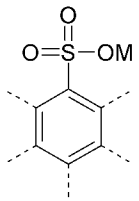
(1) 

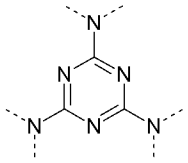
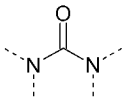
and at least three structural elements selected from the group consisting of

(2) 

(3) 

and/or 

(4) 

(5)  and/or  and/or 

where

in structural element (1)

R' is hydrogen or an alkyl, cycloalkyl, aryl, aralkyl or alkaryl radical of less than 31 carbon atoms which may be unsubstituted or substituted by alkyl radicals or heteroatom-containing groups or may be interrupted by heteroatoms or may contain double bonds;

in structural element (3)

R" and R"' are any desired radicals having a molecular weight of < 200 g/mol,

in structural elements (2), (3) and (4)

M, in each case independently of one another, are hydrogen or a cation,

and

in structural element (5)

R is hydrogen or an alkyl, cycloalkyl, aryl, aralkyl or alkaryl radical which may be unsubstituted or substituted by alkyl radicals or heteroatom-containing groups or may be interrupted by heteroatoms;

b) water or another solvent which is suitable for dissolving, dispersing, suspending or emulsifying the polymer (component A), as component B;

c) optionally, surface-active compounds, dispersants, suspending media and/or emulsifiers, as component C,

wherein the polymer (compound A) is prepared by polycondensation, wherein the following components are reacted with one another:

(1) at least one aldehyde as component Aa,

(2) at least one aromatic compound which carries at least one OM group or one sulfo group, $-SO_2OM$, or both groups, as component Ab,

and at least one of the constituents (3) and (4), wherein

(3) at least on compound selected from diphenols or polyphenols having vicinal OM groups,

it being possible, if required, for the vicinal OH groups to be protected as acetal or ketal, as component Ac,

(4) at least one amino compound as component Ad,

and where, in components Ab and Ac, M, in each case independently of one another, are hydrogen or a cation, or a divalent or polyvalent cation, if negative charges sufficient for compensation are present.

20. (Previously Presented) A process as claimed in claim 19, comprising the steps:

a) if required, cleaning of the metal surface for removing oils, greases and dirt,

b) if required, washing with water,

c) if required, pickling in order to remove rust or other oxides, in the presence or absence of the polymer (component A) used according to the invention,

d) if required, washing with water,

e) treatment of the metal surface in the presence of the polymer (component A) used according to the invention,

f) if required, washing with water,

g) if required, aftertreatment, in the presence or absence of the polymer (component A) used according to the invention.

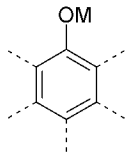
21. (Previously Presented) A process for the treatment of a metal surface, wherein the metal surface is brought into contact with a composition for the deposition of metals or metal alloys on plastics surfaces, containing:

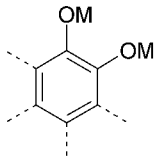
a) at least one polymer as component A, composed of the structural element

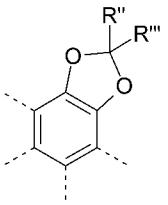
(1)

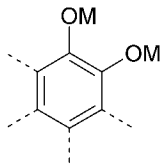
(1) 

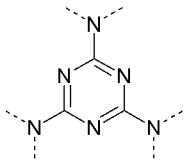
and at least three structural elements selected from the group consisting of

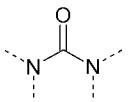
(2) 

(3) 

and/or 

(4) 

(5) 

and/or 

and/or 

where

in structural element (1)

R' is hydrogen or an alkyl, cycloalkyl, aryl, aralkyl or alkaryl radical of less than 31 carbon atoms which may be unsubstituted or substituted by alkyl radicals or heteroatom-containing groups or may be interrupted by heteroatoms or may contain double bonds;

in structural element (3)

R" and R''' are any desired radicals having a molecular weight of < 200 g/mol,

in structural elements (2), (3) and (4)

M, in each case independently of one another, are hydrogen or a cation,

and

in structural element (5)

R is hydrogen or an alkyl, cycloalkyl, aryl, aralkyl or alkaryl radical which may be unsubstituted or substituted by alkyl radicals or heteroatom-containing groups or may be interrupted by heteroatoms;

b) water or another solvent which is suitable for dissolving, dispersing, suspending or emulsifying the polymer (component A), as component B;

c) optionally, surface-active compounds, dispersants, suspending media and/or emulsifiers, as component C,

wherein the polymer (compound A) is prepared by polycondensation, wherein the following components are reacted with one another:

(1) at least one aldehyde as component Aa,

(2) at least one aromatic compound which carries at least one OM group or one sulfo group, $-SO_2OM$, or both groups, as component Ab,

and at least one of the constituents (3) and (4), wherein

(3) at least on compound selected from diphenols or polyphenols having vicinal OM groups,

it being possible, if required, for the vicinal OH groups to be protected as acetal or ketal, as component Ac,

(4) at least one amino compound as component Ad,

and where, in components Ab and Ac, M, in each case independently of one another, are hydrogen or a cation, or a divalent or polyvalent cation, if negative charges sufficient for compensation are present.

22. (canceled)

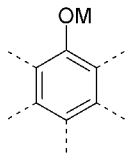
23. (Previously Presented) A process for the deposition of metals or metal alloys on a plastics surface, wherein the plastics surface is brought into contact with a composition for the deposition of metals or metal alloys on plastics surfaces, containing:

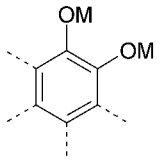
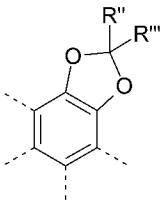
a) at least one polymer as component A, composed of the structural element

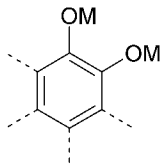
(1)

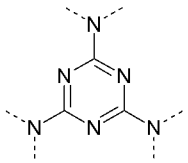
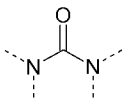
(1) 

and at least three structural elements selected from the group consisting of

(2) 

(3)  and/or 

(4) 

(5)  and/or  and/or 

where

in structural element (1)

R' is hydrogen or an alkyl, cycloalkyl, aryl, aralkyl or alkaryl radical of less than 31 carbon atoms which may be unsubstituted or substituted by alkyl radicals or heteroatom-containing groups or may be interrupted by heteroatoms or may contain double bonds;

in structural element (3)

R" and R"' are any desired radicals having a molecular weight of < 200 g/mol,

in structural elements (2), (3) and (4)

M, in each case independently of one another, are hydrogen or a cation,

and

in structural element (5)

R is hydrogen or an alkyl, cycloalkyl, aryl, aralkyl or alkaryl radical which may be unsubstituted or substituted by alkyl radicals or heteroatom-containing groups or may be interrupted by heteroatoms;

b) water or another solvent which is suitable for dissolving, dispersing, suspending or emulsifying the polymer (component A), as component B;

c) optionally, surface-active compounds, dispersants, suspending media and/or emulsifiers, as component C,

wherein the polymer (compound A) is prepared by polycondensation, wherein the following components are reacted with one another:

(1) at least one aldehyde as component Aa,

(2) at least one aromatic compound which carries at least one OM group or one sulfo group, $-SO_2OM$, or both groups, as component Ab,

and at least one of the constituents (3) and (4), wherein

(3) at least on compound selected from diphenols or polyphenols having vicinal OM groups,

it being possible, if required, for the vicinal OH groups to be protected as acetal or ketal, as component Ac,

(4) at least one amino compound as component Ad,

and where, in components Ab and Ac, M, in each case independently of one another, are hydrogen or a cation, or a divalent or polyvalent cation, if negative charges sufficient for compensation are present.

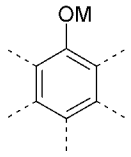
24. (Previously Presented) A process as claimed in claim 21, wherein a chemical or electrochemical metal deposition is carried out.

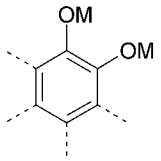
25. (Previously Presented) A composition for the deposition of metals or metal alloys on plastics surfaces, containing:

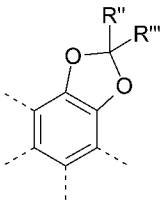
a) at least one polymer as component A, composed of the structural element (1)

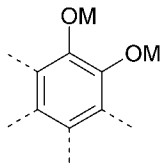
(1) 

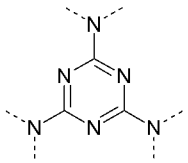
and at least three structural elements selected from the group consisting of

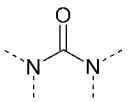
(2) 

(3) 

and/or 

(4) 

(5) 

and/or 

and/or 

where

in structural element (1)

R' is hydrogen or an alkyl, cycloalkyl, aryl, aralkyl or alkaryl radical of less than 31 carbon atoms which may be unsubstituted or substituted by alkyl radicals or heteroatom-containing groups or may be interrupted by heteroatoms or may contain double bonds;

in structural element (3)

R" and R''' are any desired radicals having a molecular weight of < 200 g/mol,

in structural elements (2), (3) and (4)

M, in each case independently of one another, are hydrogen or a cation,

and

in structural element (5)

R is hydrogen or an alkyl, cycloalkyl, aryl, aralkyl or alkaryl radical which may be unsubstituted or substituted by alkyl radicals or heteroatom-containing groups or may be interrupted by heteroatoms;

b) water or another solvent which is suitable for dissolving, dispersing, suspending or emulsifying the polymer (component A), as component B;

c) optionally, surface-active compounds, dispersants, suspending media and/or emulsifiers, as component C,

wherein the polymer (compound A) is prepared by polycondensation, wherein the following components are reacted with one another:

(1) at least one aldehyde as component Aa,

(2) at least one aromatic compound which carries at least one OM group or one sulfo group, $-SO_2OM$, or both groups, as component Ab,

and at least one of the constituents (3) and (4), wherein

(3) at least on compound selected from diphenols or polyphenols having vicinal OM groups,

it being possible, if required, for the vicinal OH groups to be protected as acetal or ketal, as component Ac,

(4) at least one amino compound as component Ad,

and where, in components Ab and Ac, M, in each case independently of one another, are hydrogen or a cation, or a divalent or polyvalent cation, if negative charges sufficient for compensation are present,

and said composition containing, in addition to components A, B and, if required, C,

i) at least one metal oxide and/or metal salt as component I,

j) if required, at least one complexing agent as component J,

k) if required, at least one acid or one alkali metal salt or alkaline earth metal salt of the corresponding acid as component K,

l) if required, further additives as component L.